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DR. JAS. MATTESON, of De Kalb Center, Ill., has sent us an elaborate solution of No. 5, which we are sorry our space will not permit us to publish.

Putting x, y and z for the three sides of the triangle, and 5, 7 and 9 for the three bisecting lines, and, moreover, putting $mx = y$ and $nx = z$, the Dr. gets, $m = .58144809885 64$, and $n = 7991785252715$.

$$x = \frac{5}{\sqrt{mn - \frac{mn}{m+n}}}, \; y = \frac{7}{\sqrt{m - \frac{mn^2}{(m+1)^2}}} \text{ and } z = \frac{9}{\sqrt{n - \frac{m^2 n}{(n+1)^2}}}.$$

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PROBLEMS.

37. BY G. SHAW, KEMBLE, ONTARIO, CANADA.—Divide unity into three parts such that if each part be increased by unity the sums shall be three rational cubes.

38. BY ASHER B. EVANS, A. M., LOCKPORT, N. Y.—Prove that when x is infinite

$$\frac{1}{|\underline{2}} - \frac{1}{|\underline{3}} + \frac{1}{|\underline{4}} - \ldots\ldots\ldots\ldots \frac{(-1)^x}{|\underline{x}} = \frac{1}{e};$$

where e is the base of Napierian logarithms.

39. BY PROF. C. M. WOODWARD, ST. LOUIS, MO.—Two weights are connected by a fine string which passes over a pulley; if the weights be 50 and 72 lbs., determine what stationary weight the string must be able to support, that it may just escape breaking during the motion.

40. BY THE EDITOR.—P and Q are two points, distant apart a miles on the bank of a straight canal, through which there flows, from Q towards P, a uniform current with the velocity of m miles per hour. R is a point on the opposite bank of the canal, at right angles from P with the line PQ. Two men, A and B, start at the same moment from the two points P and R; A starts from P and *walks* directly toward Q with the velocity of n miles per hour, and B starts from R, with a boat, and *rows*, with a constant effort that in the absence of a current, would carry him r miles per hour, and endeavors to join A by rowing continually directly towards him, and succeeds in joining A at the moment he arrives at Q. What is the width of the canal? or, distance between P and R?